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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,384

11/14/2005

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EXAMINER

PAUL, ANTONY M

ART UNIT

PAPER NUMBER

2837

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/551,384	<b>Applicant(s)</b> MULLER, KARL	
	<b>Examiner</b> ANTONY M. PAUL	<b>Art Unit</b> 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/29/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Drawings**

1. The drawings are objected to because figs 2, 3 need to be labeled. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### **Objection to Specification**

2. The disclosure is objected to because of the following informalities: The phrase, “their torque decreases significantly above and below this speed” (see page 3, third paragraph) is not clear as to which speed? Appropriate correction is required.

### **Claim Rejections – 35 USC § 112**

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regard to claim 18, the phrase, “maintenance of a sufficiently low inductive resistance in a higher speed range by selecting a correspondingly small number of turns” is not clear with respect to figs. 1-4. Applicant has acknowledged this inductive control as prior art (see specification, page 3, third paragraph). This inductive control contradicts with the frequency control as in claim 1.

### **Claim Rejections – 35 USC § 103**

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Botvinnik et al. (3,859,578) in view of Ito et al. (JP 2004275106A) (applicant can refer to 2004/0182585 or 6,968,906 for better understanding of the prior art).

In regard to claim 15, Botvinnik et al. disclose in fig. (17) an asynchronous motor [35] (column 1, lines 1-11), a frequency converter [38], which generate a drive voltage of variable frequency for said motor [35] (voltage is fed, frequency varies, see column 1,

lines 12-67, voltage at the output, see column 5, lines 12-21 and column 18, lines 28-38) and said frequency converter [38] is connected to an adjustable device such as a switch [46] for varying the frequency of said drive voltage (frequency forming means [47 F], see column 18, lines 50-52 & column 19, lines 3-11).

Botvinnik et al. further teaches asynchronous motor speed are economically controlled within broad limits at a constant torque (column 10, lines 30-33, range of speeds, see column 5, lines, 39-43) and speed of said motor [35] is adjusted by an adjusting device such as a switch or frequency foaming means [46 or 47F] and

Botvinnik et al. teaches selection of motor poles and turns such as windings [36, 37] (column 1, lines 12-19) and rotor phases (see column 5, lines 22-30) and Botvinnik et al. also teaches high torque in a lower speed range (see column 2, lines 16-28, column 10, lines 30-33).

With regards to the phrase “soil cultivation appliance for cultivating soil” in the preamble, it has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa V. Robie*, 88 USPQ 478 (CCPA 1951).

However Botvinnik et al. do not mention a rotary hoe.

Ito et al. disclose in fig. 1 a rotary hoe such as a tiller [12, 13] (see tilling machine [10], figs 1-3, [0006], and [0015]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the rotary hoe of Ito et al. in the system of Botvinnik et al. because an a tiller part is operated with an electric motor at a desired speed and a tiller part is stored and cleaned without much labor (see abstract, [0001], [0015], [0080] and [0111]).

7. Claims 15-26 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. in view of Botvinnik et al.

In regard to claim 15, Ito et al. disclose in figs.1-7 a soil cultivating appliance such as a tilling machine [10] ([0004-0007]) comprising a rotational hoe such as a tiller [12, 13] ([0015]) with an electric motor [11] for driving a tiller cultivating tool [13] (see fig.1), Ito et al. teaches in fig. (13) rotational speed control of said motor [11] and teaches achieving a constant torque such as having a fixed speed set up and further teaches actual measured speed [SN] is set to a desired revolving speed [SO] (see steps 07 thru 09, [0080] thru [0081]).

Ito et al. teaches a range of speeds for said motor [11] such as a low, medium or high speeds, which are activated by a speed adjustable device such as speed switches [91, 92, 93] (See [0030], fig.5). Selection of number of poles and turns in said electric motor [11] is an obvious matter of design choice because an electric motor [11] consists of a rotor, which have poles and windings connected to said rotor (rotor, see [0004]).

Ito et al. do not mention a frequency converter for generating a drive voltage of adjustable frequency for the motor.

Botvinnik et al. teaches a frequency converter [38] in fig.17 for generating a drive voltage of variable frequency for an asynchronous motor [35] with stator/rotor winding turns [36, 37] (see column 1, lines 1-67, column 5, lines 12-21 and column 18, lines 28-38) and said frequency converter [38] is connected to a adjustable device such as a switch [46] (column 19, lines 3-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the voltage generation frequency converter connecting a switch of Botvinnik et al. in the system of Ito et al. because speeds are economically controlled at a constant torque (column 10, lines 30-33).

In regard to claims 16 and 17, Ito et al. teaches a range of speeds such as setting low, medium or high speed control of a motor [11]. Ito et al. differs from the claimed invention by not mentioning a speed range of 20 to 6500rpm (or 10 to 3000rpm).

It would have been obvious to one having ordinary skill in the art at the time the invention was made for a motor to have a speed range of 20 to 6500rpm (or 10 to 3000rpm), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

In regard to claim 18, maintenance of low inductive resistance in a higher speed range depends upon the selection of motor design choice.

In regard to claim 19, varying torque depends upon the current or voltage applied to the motor windings and Ito et al. teaches varying speed such as low, medium or high

speed and hence variable current or voltage is needed to have a varying speed. Ito et al. differs from the claimed invention by not mentioning the torque of the motor varies by no more than 10% over a range of motor speeds.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the torque of the motor varies by no more than 10% over a range of motor speeds, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

In regard to claim 20, the frequency conversion limitation is explained in claim 1. Ito et al. differs from the claimed invention by not mentioning a maximum frequency in excess of 100 Hz.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a maximum frequency in excess of 100 Hz, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

In regard to claim 21, Ito et al. disclose in fig. 5 an electromechanical control of a motor [11] operating in a forward mode such as a high speed mode or a reverse mode such as a low speed mode ([0080]). Speed limiter switches [91-93] vary said motor speed.

Ito et al. differs from the claimed invention by not mentioning speed limiting of the motor in the reverse mode to no more than 50% of a forward speed mode.



It would have been obvious to one having ordinary skill in the art at the time the invention was made to limit motor speed in the reverse mode to no more than 50% of a forward speed mode, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

In regard to claim 22, Ito et al. shows in fig.5 electromechanical control [20] connecting switches [91-93] for starting a motor [11] of a tiller appliance [10]. Ito et al. also shows a till motor [11] starting switch [74 or 75 or 22] to start said motor [11] and forward switch ([86] or [91-93]) to perform motor rotation. A switching element operated in a depressed position by a user against a force of a spring is obvious because the switching element is a push or manual button switches [22] or [72, 73 or 83] (see [0038]).

In regard to claim 23, electrical operation of a till appliance [10] is interrupted during change over between different speed modes using switches [91-93] or during stopping of said motor [10] using another switch [74 or 75] ([0082]).

In regard to claim 24, Ito et al. disclose in fig. 5 a battery [31] supplying dc power to a control section [20]. Ito et al. do not mention a frequency converter having a direct voltage output.

Botvinnik et al. teaches a frequency converter [38] in fig.17, having a direct voltage output [T] (dc voltage references, see column 19, lines 25- 40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the frequency converter with a direct voltage output of

Botvinnik et al. in the system of Ito et al. because speeds are economically controlled at a constant torque (column 10, lines 30-33).

In regard to claim 25, Ito et al. shows in fig. 5 a microprocessor control [20 or 102].

In regard to claim 26, Ito et al. do not mention a potentiometer.

Botvinnik et al. disclose in fig. 14 a potentiometer [24].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the potentiometer of Botvinnik et al. in the system of Ito et al. because a stable, economical motor operation conditions and improvement in transient characteristics are achieved (column 10, lines 25-33).

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTONY M. PAUL whose telephone number is (571)270-1608. The examiner can normally be reached on Mon - Fri, 7:30 to 5, Alt. Fri, East.Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 4158

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AP            07/16/2008

/Walter Benson/  
Supervisory Patent Examiner, Art Unit 4158